

**AMENDMENTS TO THE CLAIMS**

1. (Currently amended) A method for diplexer-based dithering a desired signal having a frequency band, the method comprising:

generating a noise signal;  
amplifying the noise signal;  
filtering the amplified noise signal, so as to prevent that noise signal from adversely affecting the frequency band of the desired signal; and  
diplexing with a diplexer the filtered noise signal with the desired signal to produce a signal+noise signal.

2. (Original) The method of claim 1 further comprising:  
providing the signal+noise signal to a noise-based application.

3. (Original) The method of claim 2 wherein the noise-based application is a data conversion process.

4. (Original) The method of claim 1 wherein the noise signal is thermal noise.

5. (Original) The method of claim 1 wherein filtering the amplified noise signal includes low-pass filtering that noise signal.

6. (Currently amended) The method of claim 1 wherein the diplexing the filtered noise signal with the desired signal to produce a signal+noise signal includes providing-provides insertion loss associated with the desired signal and the noise signal of 1 dB or less.

7. (Currently amended) A method for dithering a desired signal having a frequency band, the method comprising:

generating a noise signal;  
amplifying the noise signal; and

passively combining the amplified noise signal with the desired signal to produce a signal+noise signal, wherein both the desired signal and the noise signal experience insertion loss of 3 dB or less.

8. (Original) The method of claim 7 wherein amplifying the noise signal further includes:

filtering the noise signal, so as to prevent the noise signal from adversely affecting the frequency band of the desired signal.

9. (Original) The method of claim 8 wherein filtering the noise signal includes low-pass filtering that noise signal.

10. (Currently amended) The method of claim 7 wherein passively combining the amplified noise signal with the desired signal further includes combining a second noise signal, and the desired signal + noise signal includes the second noise signal.

11. (Original) The method of claim 7 further comprising:  
providing the signal+noise signal to a noise-based application.

12. (Original) The method of claim 11 wherein the noise-based application is a data conversion process.

13. (Original) The method of claim 7 wherein the noise signal is thermal noise.

14. (Original) The method of claim 7 wherein the insertion loss experienced by the noise signal is less than 1 dB.

15. (Currently amended) A self-contained dithering device comprising:  
a noise source adapted to generate a noise signal;  
an amplification stage adapted to amplify the noise signal; and  
a diplexer adapted to diplex the filtered noise signal with ~~the a~~ a desired signal to produce a signal+noise signal ~~that can be used in a data conversion process.~~

16. (Original) The device of claim 15 wherein the amplification stage is further adapted to filter the noise signal, so as to prevent that noise signal from adversely affecting the frequency band of the desired signal.

17. (Original) The device of claim 15 wherein the amplification stage further includes one or more active low-pass filters adapted to filter the noise signal.

18. (Original) The device of claim 15 wherein the noise signal is thermal noise.

19. (Original) The device of claim 15 wherein the diplexer provides an insertion loss associated with the noise signal that is 1 dB or less.

20. (Original) The device of claim 15 wherein the device is contained in a package having a power input, a desired signal input, a signal+noise output, and a common.

21. (New) A method for diplexer-based dithering a desired signal having a frequency band, the method comprising:

diplexing with a diplexer a noise signal with a desired signal to produce a signal+noise signal for use in a data conversion process performed by an analog-to-digital converter.

22. (New) The method of claim 21 wherein the diplexing is performed with a passive diplexer.

23. (New) The method of claim 21 wherein insertion loss experienced by the noise signal is 1 dB or less.

24. (New) The method of claim 1 wherein the diplexing is performed with a passive diplexer.

25. (New) The device of claim 15 wherein the diplexer is a passive diplexer.